Clarke®

WARNING: Do not use the appliance without reading this manual

3 PHASE HOT WASHER

MODEL NO: HLS160

PART NO: 7320535

OPERATION & MAINTENANCE INSTRUCTIONS

CE

LS0911

INTRODUCTION

Thank you for purchasing this CLARKE 3 phase hot washer.

Before attempting to use this product, please read this manual thoroughly and follow the instructions carefully. In doing so you will ensure the safety of yourself and that of others around you, and you can look forward to your purchase giving you long and satisfactory service.

GUARANTEE

This product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt which will be required as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not effect your statutory rights.

LIST OF CONTENTS

The following items should be supplied in the carton. If any parts are missing or damaged, please see your Clarke dealer where you purchased the Pressure Washer.

1 x Hot Water Power Jet Cleaner
1 x 10M Hose
1 x Spray Gun Assembly
1 x Lance Assembly
1 x Operating & Maintenance Manual

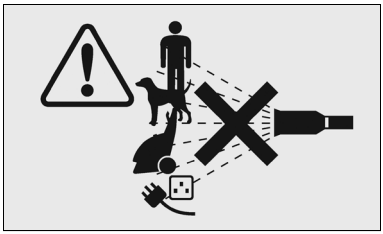
GENERAL SAFETY RULES

WARNING: WATER AT HIGH PRESSURE CAN BE DANGEROUS AND CAN CAUSE DAMAGE IF THE OPERATOR IS CARELESS. NEVER ALLOW ANYONE TO OPERATE THIS PRESSURE WASHER UNLESS THEY ARE FAMILIAR WITH THE SAFETY PRECAUTIONS.

1. **WARNING** High pressure water jets can be dangerous if subject to misuse. The jet must not be directed at animals or people.
2. **NEVER** allow children or untrained personnel to use this pressure washer.
3. **NEVER** operate the pressure washer with any of the covers removed.
4. **NEVER** attempt any electrical or mechanical repairs to this pressure washer. Always refer to your Clarke dealer.
5. **NEVER** supply any liquid other than water to the water inlet.
6. **NEVER** use the detergent pickup facility to introduce flammable liquids/solvents, e.g. paint thinners, petrol, oil as there is a risk of explosion.
7. **ALWAYS** release any residual pressure in the system by turning off the water supply and operating the trigger, before disconnecting any hose or accessory.
8. **ALWAYS** keep the pressure washer itself dry and clear of water spray.
9. **NEVER** direct the spray jet at the pressure washer itself or any other electrical equipment.
10. **ALWAYS** wear protective clothing and safety glasses. Loose particles and other debris may be propelled at high speed by the water jet.
11. **ALWAYS** hold the spray gun firmly and expect the gun to 'kick' when starting.
12. **ALWAYS** disconnect from the water supply and ensure the system is completely drained when not in use. Store in a cool dry location.
13. **ONLY** use chemical cleaning agents (detergents), that are approved for pressure washers. CLARKE Traffic Film Remover or CLARKE Wash and WAX (available from your dealer), are recommended.
14. **ALWAYS** Disconnect from the electrical power supply before carrying out user maintenance.
15. **ONLY** use original spare parts from the manufacturer or approved by the Clarke service department.
16. **WARNING**: High pressure hoses, fittings and couplings are important for the safety of the appliance. Use only hoses, fittings and couplings recommended by the manufacturer.
17. **NEVER** use the pressure washer if a power cord or important parts of the pressure washer are damaged, e.g. safety devices, high pressure hoses, trigger gun.

Recycle unwanted materials instead of disposing of them as waste. All tools, accessories and packaging should be sorted, taken to a recycling centre and disposed of in a manner which is compatible with the environment.

SAFETY SYMBOLS

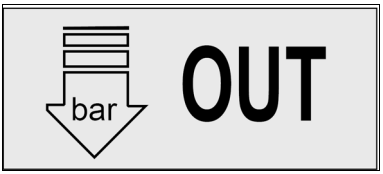


WARNING: Do not direct discharge stream at persons or animals. Keep clear of nozzle.

WARNING: Never direct spray toward any electrical device or electrical outlet.

WARNING: Risk of hot surfaces. Avoid contact with hot exhaust components. Don't allow hoses to contact the exhaust muffler during or after use.

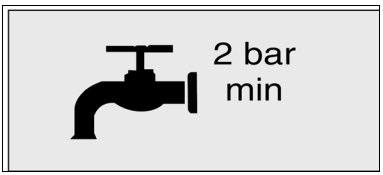
Fuel Tank



High Pressure Water Outlet

Total Stop System

Detergent Tank



Water Input

ELECTRICAL CONNECTIONS

	WARNING! READ THESE ELECTRICAL SAFETY INSTRUCTIONS THOROUGHLY BEFORE CONNECTING THE PRODUCT TO THE MAINS SUPPLY.

Connect the mains lead to a suitably fused 400V, 3 phase electrical supply via a 16 Amp Industrial connector (to BSEN 60309-1/2)

The electric supply connection shall be made by a qualified electrician and comply with IEC 60364-1.

We strongly recommend that this pressure washer is connected to the supply via a suitable 3 phase 30 mA Residual Current Device.

FUSE RATING

The fuse rating for this pressure washer is 16 Amps.

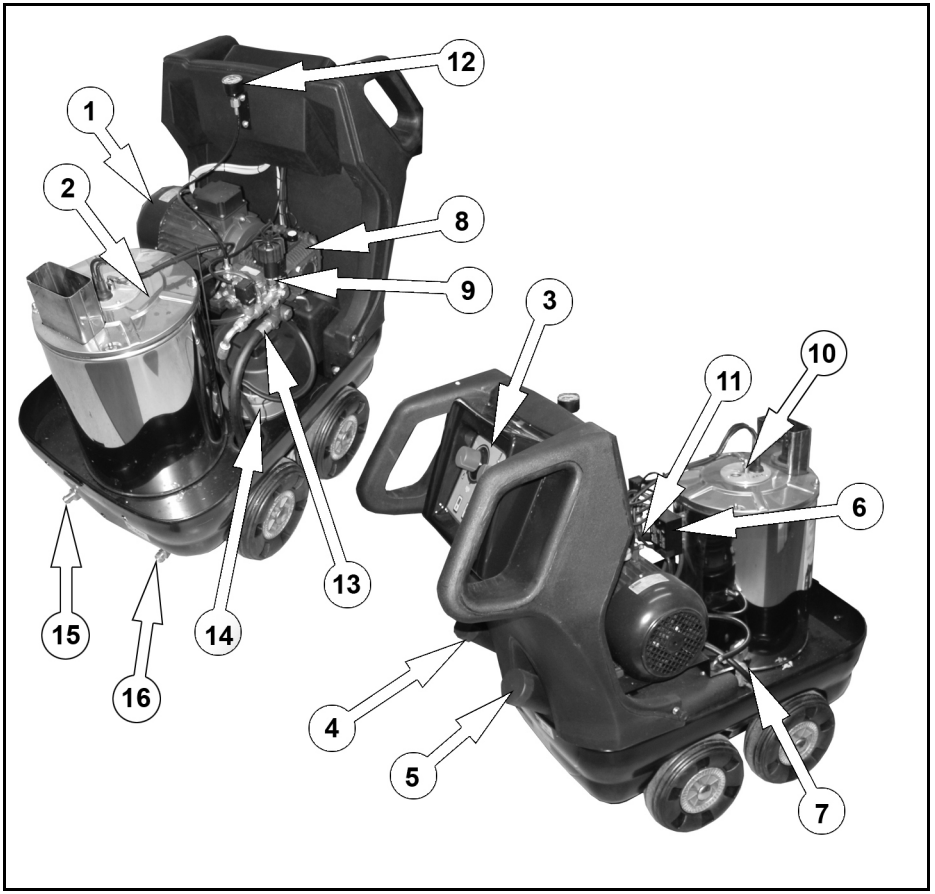
EXTENSION CABLES

If an extension cable is used, always ensure it is fully unwound. When used outdoors, ensure the extension cable is specifically designed for outdoor use.

If an extension cable is used, the plug and socket must be of watertight construction.

WARNING: INADEQUATE EXTENSION CABLES CAN BE DANGEROUS. ENSURE THE CABLE IS RATED FOR THE VOLTAGE AND AMPERAGE OF THE PRESSURE WASHER.

PARTS IDENTIFICATION

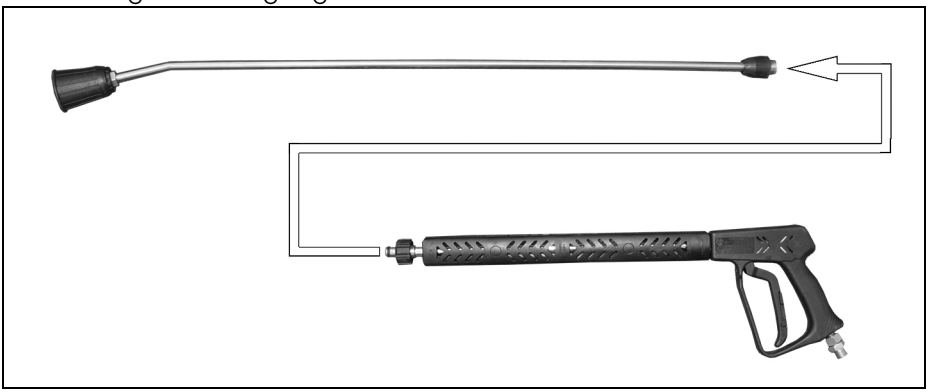


1	Electric Motor	9	Pressure Adjustment Valve
2	Boiler	10	Combustion Head
3	Control Panel	11	Pressure Switch
4	Detergent Tank Filler	12	Pressure Gauge
5	Fuel Tank Filler	13	Fuel Pump
6	Transformer	14	Burner Motor
7	Fuel Filter	15	Water Supply Inlet
8	High Pressure Pump	16	High Pressure Outlet

ASSEMBLY

THE LANCE

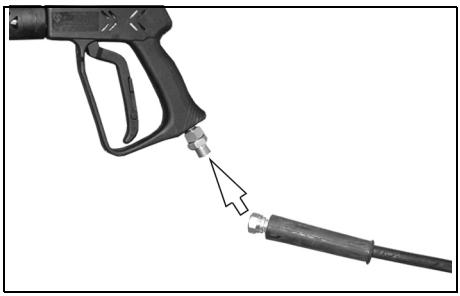
1. Connect the spray lance to the gun assembly and tighten securely by turning the locking ring.



CONNECTING THE HIGH PRESSURE HOSE

CONNECT THE HOSE TO THE GUN

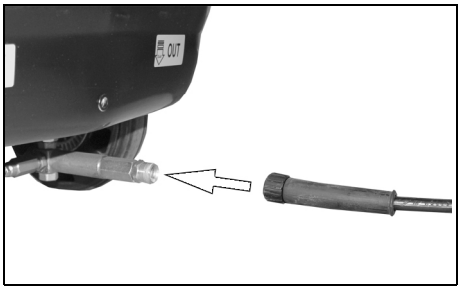
1. Screw the high pressure hose onto the gun assembly.
2. Use a spanner to tighten the connector.



CONNECT THE HOSE TO THE WASHER

1. Screw the hose on to the pressure washer outlet.
   - Tighten the connector hand tight only, Do not use a spanner.

NOTE: Make sure the connection is secure.



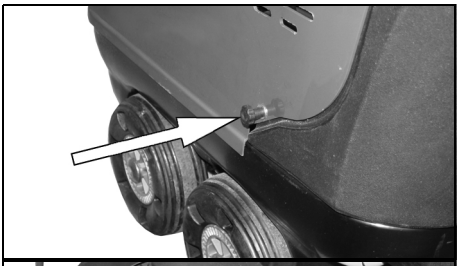
BEFORE USE

CHECK OIL

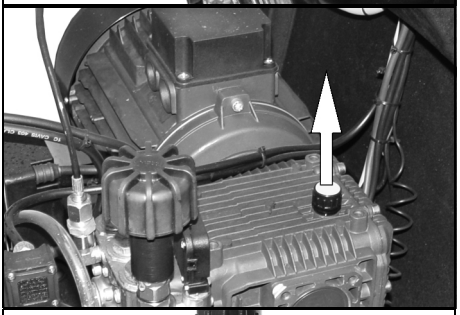
WARNING: TO CARRY OUT THIS CHECK, PLACE THE PRESSURE WASHER ON LEVEL GROUND WITH THE PRESSURE WASHER SWITCHED OFF.

WARNING: TAKE CARE NOT TO TOUCH ANY HOT PARTS WHEN CHECKING THE OIL LEVEL.

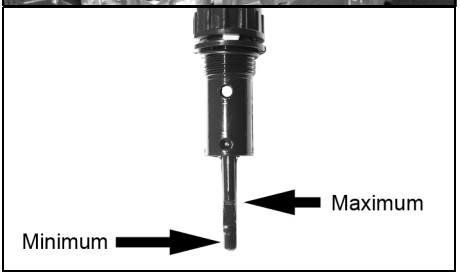
1. Remove the cover from the pressure washer by removing the securing screw from each side of the cover then lifting the cover off.



2. Turn the oil filler cap anticlockwise and remove it from the pump, wipe the integral dipstick with a clean cloth.



3. Insert the oil filler cap back into place and then remove it again.
4. If the oil reads low on the dipstick, add oil to the oil reservoir (Max 0.463L).
   - Do not overfill the oil reservoir.
   - We recommend the use of SAE30W oil.



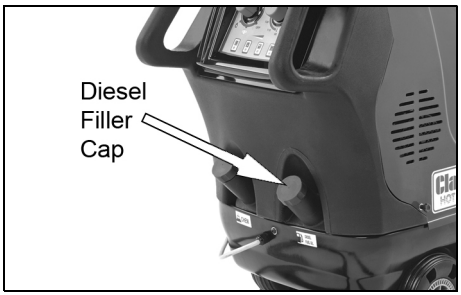
   - Do not mix grades of oil as this may effect the pressure washers performance.
5. Replace the oil filler cap.
6. Replace the cover and tighten the securing screws

NOTE: Running the pump with insufficient oil will cause damage.

FUEL

- Refuel in a well-ventilated area, away from any sources of ignition.
- If the pressure washer has been running, allow it to cool before refueling.
- Do not leave fuel within the reach of children.
- Refuel carefully to avoid spilling fuel.

1. Remove the Diesel filler cap and fill the tank with diesel fuel.
   - Maximum 15L
2. Replace the Diesel filler cap securely.

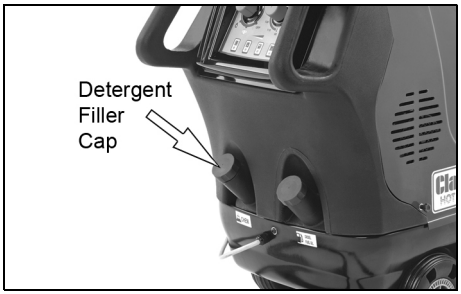


WARNING: INCORRECT FUELS MUST NOT BE USED AS THEY MAY PROVE HAZARDOUS.

DETERGENT INJECTION FACILITY

If you intend to use the detergent injection facility

1. Unscrew the Detergent Filler Cap located at the rear of the pressure washer and fill with detergent.
   - Only use detergents recommended for use with pressure washers, such as CLARKE Traffic Film Remover which is a powerful low foaming agent for car cleaning, patio cleaning etc., or CLARKE Wash & Wax, both available from your CLARKE dealer



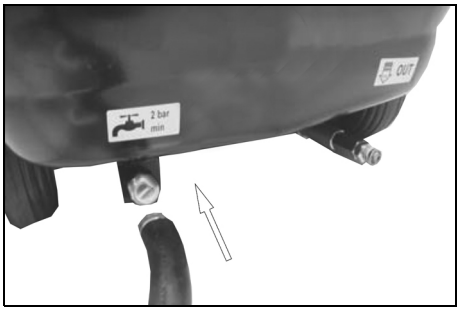
CONNECTING THE WATER SUPPLY

The pressure washer must never be connected to the drinking water supply without using a system separator (also known as a backflow preventer) available from most hardware stores.

Always follow the regulations of your local water supplier.

CAUTION: WATER THAT HAS FLOWED THROUGH A SYSTEM SEPARATOR IS CONSIDERED NON-DRINKABLE.

1. Connect the water supply hose to the inlet fitting.
2. Connect the inlet fitting to the Water inlet as shown.
   - It is recommended to use a reinforced hose having an inner diameter of at least 10 mm.
   - The water supply must be able to deliver at least 15 l/min. and have a max inlet temperature of 55 °C.

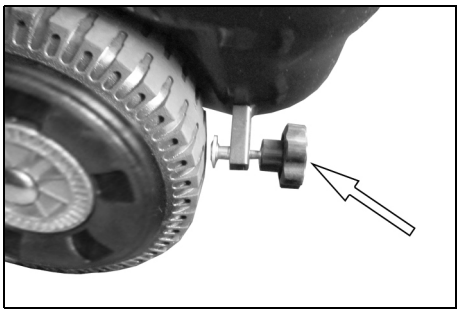


PARKING BRAKE

Before you operate you pressure washer you should make sure that the parking brake is engaged.

To do this screw the brake shown in the picture against the wheel to engage the parking brake.

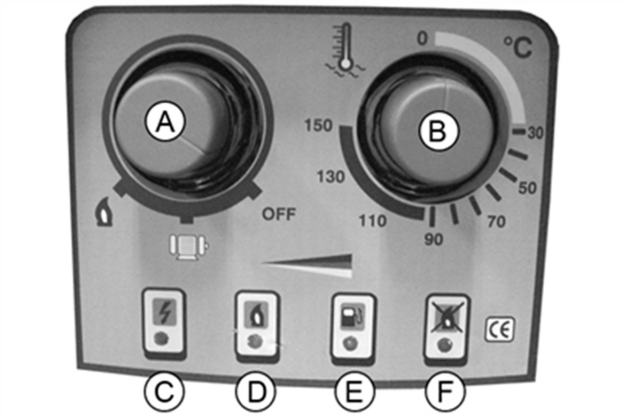
Screw the brake in the opposite direction to release the parking brake, and allow you to move the pressure washer.



OPERATION

1. The pressure washer should always be located on a firm level surface where it is not exposed to extreme weather conditions such as strong wind, freezing or rain.
2. It is recommended that where possible a partition be erected between the wash area and the pressure washer to prevent accidental spraying of the pressure washer. Moisture entering the pressure washer may cause serious damage.
3. Do not operate the pressure washer indoors, or in enclosed areas without adequate ventilation, or in areas where flammable vapours (petrol, solvents etc.) may be present.
4. If the pressure washer is to be used in an enclosed area the burner exhaust MUST BE vented to the outside atmosphere. The use of a draft regulator is recommended. All venting must be in accordance with applicable laws and local ordinances for such installations.

CONTROL PANEL



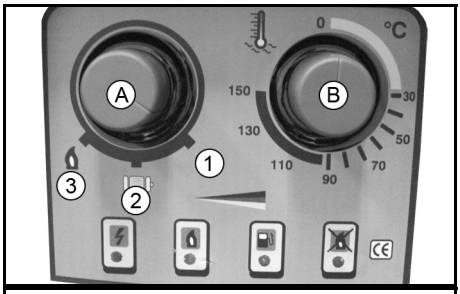
A	Operating Mode Selector	D	This is lit when the burner is on.
B	Temperature selector (from 0°C to 150 °C.)	E	This is lit when there is a lack of fuel in the tank.
C	This is lit when connected to an electrical power supply.	F	This flashes when the flame turns off inside the boiler.

COLD WASH OPERATION

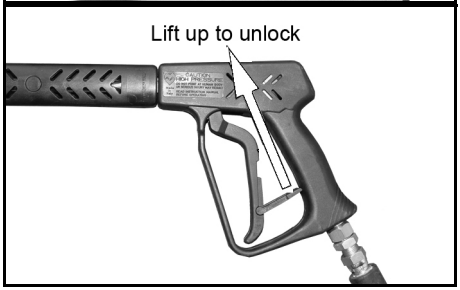
1. Turn the water supply tap on, making sure that it is fully open.

WARNING: FAILURE TO TURN ON THE WATER FULLY COULD CAUSE DAMAGE TO THE PRESSURE WASHER.

2. Set the mode selector (A) to position 2 (pump setting)
3. Set the Temperature selector (B) to "0" for cold washing.
   - The pressure washer is now ready for use.



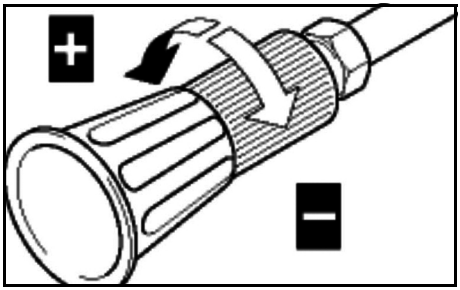
4. Release the trigger lock.
5. Ensuring that you have a firm footing and that you are also holding the gun assembly and spray lance firmly, pull the trigger on the gun to start water flow.
   - The lance and gun will kick back when the trigger is first pulled.



USING DETERGENT

The detergent is applied by twisting the cap on the lance as shown and then pulling the trigger on the gun.

CAUTION: IF YOUR EYES COME INTO CONTACT WITH ANY CLEANING FLUIDS, RINSE THEM IMMEDIATELY WITH PLENTY OF FRESH CLEAN WATER AND SEEK MEDICAL ADVICE IF REQUIRED.



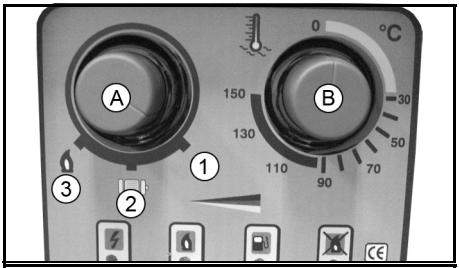
HOT WASH OPERATION

WARNING: THE BURNER EXHAUST MUST BE VENTED TO THE OUTSIDE ATMOSPHERE. THE USE OF A DRAFT REGULATOR IS RECOMMENDED. ALL VENTING MUST BE IN ACCORDANCE WITH APPLICABLE LAWS AND LOCAL ORDINANCES FOR SUCH INSTALLATIONS.

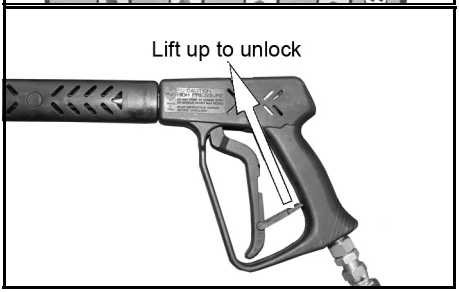
1. Turn the water supply tap on, making sure that it is fully open.

WARNING: FAILURE TO TURN ON THE WATER FULLY COULD CAUSE DAMAGE TO THE PRESSURE WASHER.

2. Set the mode selector (A) to position 3 (hot wash setting)
3. Set the Temperature selector (B) to the required temperature.
   - The pressure washer is now ready for use.



4. Release the trigger lock.
5. Ensuring that you have a firm footing and that you are also holding the gun assembly and spray lance firmly, pull the trigger on the gun to start water flow.
   - The lance and gun will kick back when the trigger is first pulled.



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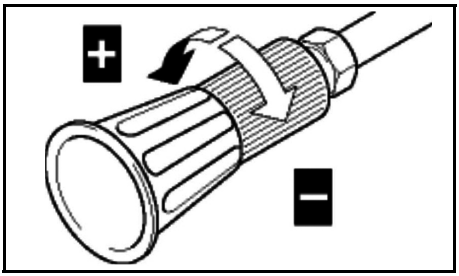
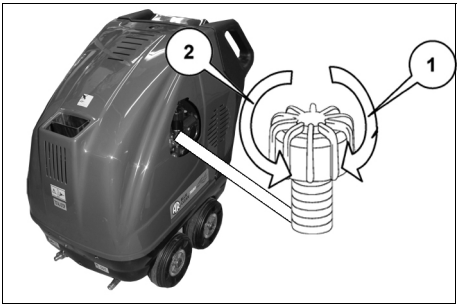


ADJUSTING THE PRESSURE

WARNING: MAKE SURE THE OPERATING PRESSURE DOES NOT EXCEED THE MAXIMUM PRESSURE INDICATED ON THE RATING PLATE

Reach into the access window and turn the pressure adjustment valve.

- Turn clockwise (1) to increase the pressure.
- Turn anti-clockwise (2) to decrease the pressure.

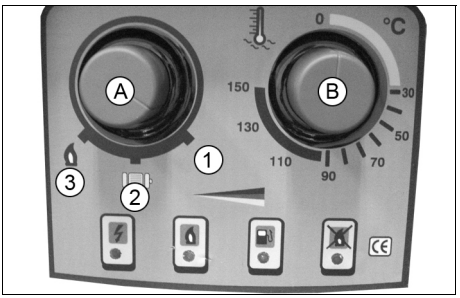


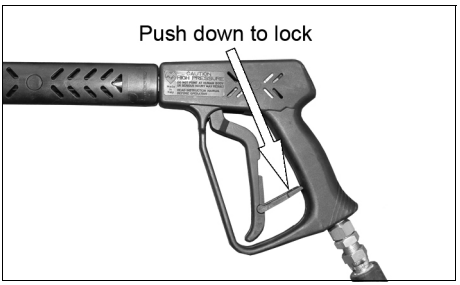
TOTAL STOP SYSTEM

NOTE: The washer is fitted with a total stop system. When the trigger is released the motor will stop. This system is designed to protect the motor and is also an important safety feature.

AFTER USE

1. Set the mode selector (A) to position 1 (OFF)
2. Turn water supply off at the tap.
   - NEVER turn the water off with the pressure washer running.
3. Release the pressure in the pump and hose by squeezing the trigger for a few seconds until no more water comes out of the nozzle.
4. Move the trigger lock to the locked position.
5. Store the pressure washer in a dry safe place to prevent unauthorised persons from using it.





MAINTENANCE AND SERVICING

- All repairs and maintenance operations must be carried out by authorised personnel.
- All maintenance operations must be carried out keeping the pressure washer on an even floor.
- The pressure washer must be disconnected from the power and water supplies.
- Correct use and maintenance is necessary to guarantee the pressure washer's reliability and best performance.
- The pressure washer needs constant checks that are to be carried out according to the following time schedules:

DAILY (BEFORE EACH USE)

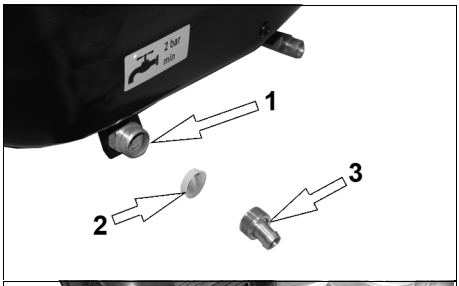
CHECK THE OIL LEVEL OF THE PUMP

See "Check oil" on page 8.

EVERY 2 WEEKS OR AFTER 50 HOURS WORKING

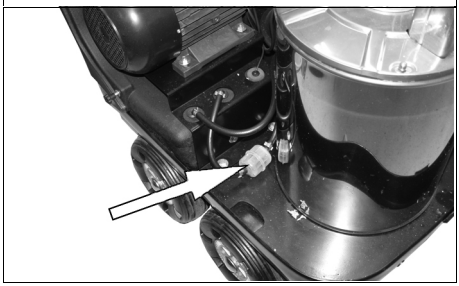
CLEAN THE WATER FILTER

1. Remove the inlet fitting (3)
2. Clean the water filter (2) located in the water inlet (1).



REPLACING THE FUEL FILTER.

1. Remove the cover from the pressure washer.
2. Check the filter.
   - If dirty, replace it with a new filter.



EVERY MONTH OR AFTER 100 HOURS OF WORK

CLEAN THE COMBUSTION HEAD AND CHECK THE ELECTRODES.

It is recommended that the burner and electrodes be serviced yearly, or as needed depending upon the pressure washers' usage, Please contact the CLARKE International Service Dept.

(This maintenance operation must be carried out by skilled personnel.)

EVERY MONTH 0R AFTER 200 HOURS OF WORK

CLEAN THE COMBUSTION PUMP FILTER.

(This maintenance operation must be carried out by skilled personnel.)

SOOT BUILD UP

Poor grades of fuel oil or inadequate combustion will cause heavy build up of soot on the heating coil. This deposit will insulate the coil and reduce its efficiency. It will also restrict air flow through the coil, further aggravating the soot build up. Contact your CLARKE dealer or CLARKE International Service Dept. on: 020 8988 7400 when de-sooting is required.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Water does not come out	Dirty water filter blocked	See "Clean the water filter" on page 15.
	Clogged lance nozzle	Clean
Low pressure or irregular pressure	Insufficient water supply	Check the Capacity
	The pump takes in air	Check
	Worn out gaskets	Contact Clarke Service Department
	Exceeding the inlet water temperature	Make sure the water supply is below 55 degrees
	Coil is covered in limescale	Contact Clarke Service Department for advice on descaling
The burner does not turn on	Dirty burner nozzle	Contact Clarke Service Department
	Faulty thermostat	Contact Clarke Service Department
	Broken/blocked electrovalve	Contact Clarke Service Department
	Dirty fuel filter	See "Replacing the fuel filter." on page 15.
	Insufficient electrodes spark	Contact Clarke Service Department
	Defective flowmeter and/or pressure switch	Contact Clarke Service Department
	Worn out motor pump joint	Contact Clarke Service Department
	Low Voltage	Make sure the pressure washer is connected to a suitable power supply
Noisy pressure washer	Air intake worn out / dirty/blocked valves	Contact Clarke Service Department
Water in the oil	Worn out water/oil rings	Contact Clarke Service Department
Oil leaking from the head	Worn out o-rings or the seal system	Contact Clarke Service Department
Motor suddenly stops	Thermal protection has activated due to overheating	Switch off the pressure washer and wait until the unit has cooled down sufficiently.

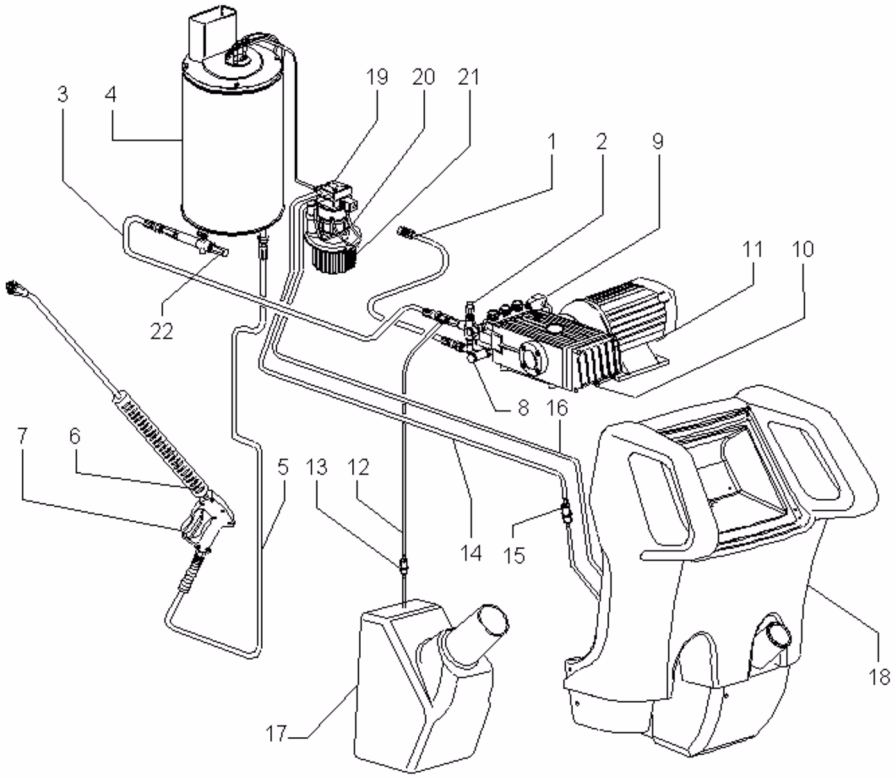
Parts & Service: 020 8988 7400 / E-mail: Parts@clarkeinternational.com or Service@clarkeinternational.com

SPECIFICATIONS

Model Number	HLS160
Part Number	7320535
Voltage	400 V / 50 Hz / 3 Phase
Power	5000 W
Working pressure	145 Bar / 2103 PSI
Maximum output pressure	150 Bar / 2175 PSI
Maximum output flow rate	900 L / hour
Maximum output temperature	150 ^{O}C
Maximum input temperature	55^{O}C
Oil capacity	0.463 L
Fuel tank capacity	15 L
Detergent tank capacity	5 L
Sound power level (L_{WA})	80.7 dB
Guaranteed sound power level (L_{WA})	89 dB
Dimensions (L x W x H)	980 x 590 x 920 mm
Weight	114 kg

Parts & Service: 020 8988 7400 / E-mail: Parts@clarkeinternational.com or Service@clarkeinternational.com

BASIC LAYOUT



POS	DESCRIPTION	POS	DESCRIPTION
1	Water Inlet Pipe	12	Detergent Pipe
2	Adjustable Pressure Valve	13	Detergent Filter
3	Intake Pipe to Boiler	14	Fuel Intake Pipe
4	Boiler	15	Fuel Filter
5	High Pressure Hose	16	Fuel Outlet Pipe
6	Lance	17	Detergent Tank
7	Gun	18	Fuel Tank
8	By-pass Valve	19	Fuel Pump
9	Pressure Switch	20	Motor Fan
10	Pump	21	Fan
11	Electric Motor	22	Safety Valve.

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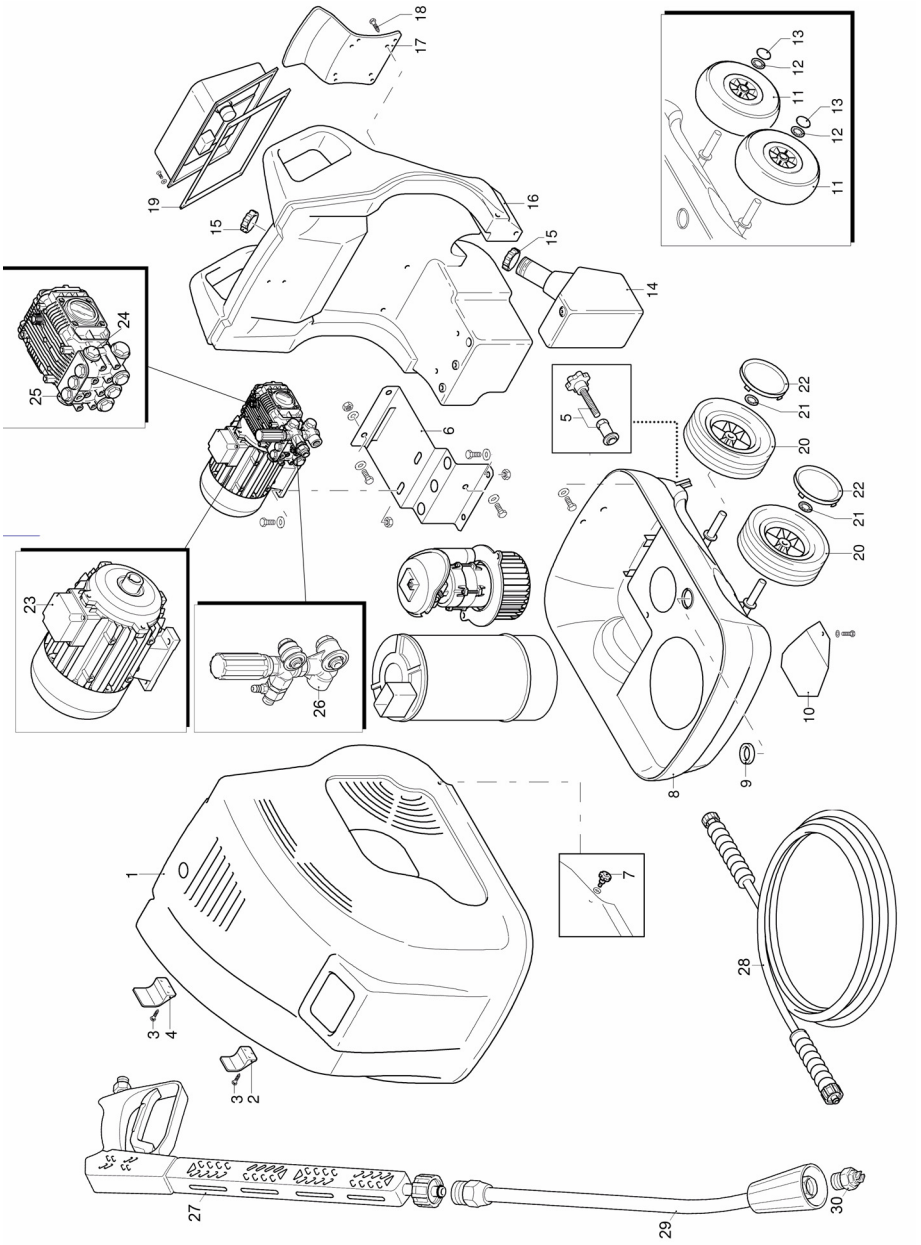
EXPLODED DIAGRAM



PARTS LIST

No	Description	Part number
1	Blue casing	AR3160750
2	Accessories carrier	AR3160100
3	Screw	AR2100300
4	Accessories carrier	AR3160110
5	Knob	AR3163980
6	Support	AR3160660
7	Knob	AR3163990
8	Frame	AR3160700
9	Gasket	AR3161070
10	Guard	AR3161900
11	Wheel	AR3160780
12	Washer	AR3163830
13	Guard	AR3162020
14	Tank	AR3161740
15	Plug	AR3161920
16	Tank	AR3161730
17	Accessories carrier	AR3160090
18	Screw	AR2360360
19	Gasket	AR3161070
20	Wheel	AR3160770
21	Washer	AR3162010
22	Axle Cover	AR3161940
23	Motor	AR44285
24	Head assembly	AR1789315
25	Pump assembly	AR22954
26	Complete valve	AR20082
27	Gun	AR41089
28	High pressure hose	AR3160160
29	Lance	AR40826
30	Nozzle	AR3083

DECLARATION OF CONFORMITY

CE

Clarke® INTERNATIONAL

Hemnall Street, Epping, Essex CM16 4LG

DECLARATION OF CONFORMITY

This is an important document and should be retained.

We, Clarke International, as the authorised representative of the manufacturer, declare that the following product(s) comply with the directive(s) and standard(s) listed below.

Product Description:	3 Phase Hot Water Pressure Washer
Model number(s):	HLS160
Serial / batch Number:	N/A
Notified Body:	N/A……
	……
	……
	……
	……
Technical Documentation Holder:	A.R. Pond
	Clarke International
	2a Shrubland Road
	London E10,7RB
	UK
Conformity Assessment Procedure:	to 2000/14/EC Annex V
Manufacturer:	European Supplier
Noise Related Value:	5.0 kW
Measured Sound Power Level:	80.7dB
Guaranteed Sound Power Level:	89 dB

DECLARATION OF CONFORMITY

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Directive(s):

2006/42/EC	*Machinery Directive.*
2006/95EC	*Low Voltage Equipment Directive.*
2002/95/EC	*Restriction of Hazardous substances.*
2004/108/EC	*Electromagnetic Compatibility Directive.*
2002/96/EC	*Waste Electrical and Electronic Equipment.*
2000/14/EC	*Noise Emissions Directive, (amended by 2005/88/EC).*

Standard (s):

EN 60335-1, EN 60335-2-79, EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3, EN 61000-3-11, EN 60704-1.

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned directive(s) has been compiled and is available for inspection by the relevant enforcement authorities.

The CE mark was first applied in: 2011

Signed: J.A. Clarke
Director

Date of Issue: 24/05/2011

Place of issue: Clarke International
Hemnall Street
Epping
Essex, CM16 4LG
England

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E-mail: Parts@clarkeinternational.com or Service@clarkeinternational.com

SALES: UK 01992 565333 or Export 00 44 (0)1992 565335

Clarke® INTERNATIONAL Hemnall Street, Epping, Essex CM16 4LG
www.clarkeinternational.com